MacDill Air Force Base
6th Air Mobility Wing

Mid-Air Collision Avoidance (M.A.C.A.)

www.seeandavoid.org
www.macdill.af.mil

August 2012

Purpose

This handbook is intended to provide general information only and is not a definitive manual or chart. Always consult current FAA regulations, available charts, and consider existing meteorological conditions. The United States Air Force accepts no liability for any claim arising under or as a result of reliance upon this handbook and reserves protection from liability as afforded under the Federal Tort Claims Act, 28 USC, Section 2680.

Table of Contents

A Message from the Chief of Safety, MacDill Air Force Base

Thank you for your interest in MacDill Air Force Base's Mid-Air Collision Avoidance (MACA) program. This pamphlet, prepared by the 6th Air Mobility Wing's Flight Safety office, provides invaluable information about our air operations and the surrounding airspace for Tampa, St. Petersburg, and Clearwater area aviators.

Our airfield is home to a myriad of aircraft, notably the KC-135R tanker and C-37A executive transport. Included in this pamphlet is information to increase your familiarization with these and other aircraft, as well as MacDill's local flight pattern, potential areas of conflict, and recent events that highlight the need for vigilance. It is this vigilance that makes operations in a collective airspace the safest it can possibly be.

Our region contains some of the busiest and most complex airspace in the United States, and the corresponding congestion means a necessary increase in attentiveness by both military and civilian pilots. Communication with air traffic control agencies, aggressive clearing by aviators, and procedural knowledge will help us safely operate together.

Please read this pamphlet carefully and pass it along to your fellow aviators. Only as a community can we ensure the continued and safe operation of aircraft in the MacDill area.

If you have any questions or suggestions to improve our MACA program, please contact the Flight Safety Office at (813) 828-2380. I thank you once again for your concern for aviation safety. Fly Safe!

CURTIS C. WHITE, Lt Col, USAF
Chief of Safety

A Message from MacDill's Flight Safety Office

***Fellow Aviators*:**

We are providing this brochure to you in the hope that the information contained within will be useful while flying in the Tampa/MacDill AFB area. The Tampa area has numerous airfields including, but not limited to, Tampa International, St. Petersburg-Clearwater International, Vandenberg, Peter O. Knight, Albert Whitted Municipal, and MacDill Air Force Base.

The military flying activity in the area is very busy, and MacDill hosts aircraft varying greatly in size and performance - from small fighters, such as the F-16, to very large cargo platforms, like the C-5. MacDill AFB is home to Air Force and National Oceanic and Atmospheric Administration (NOAA) aircraft. In addition, a wide variety of Air Force, Navy, and Marine Corps aircraft periodically visit for training. As a result, there are times when the MacDill traffic pattern is saturated with different types of aircraft. All flyers, whether military or civilian, must remain aware of the potential for mid-air collisions.

Through education, awareness, and application of the "See and Avoid" concept, we can all share the skies more safely. While this brochure may be used as an aid for Tampa area aviators, it cannot compare to a good set of eyes and proper flight planning. If you have any questions regarding this brochure, or if you need additional copies, please feel free to contact us at:

6 AMW Flight Safety
8208 Hangar Loop Drive, Suite 9
MacDill AFB FL 33621-5502
Phone: (813) 828-2380/2480
Fax: (813) 828-6794
Email: 6amw.sef@macdill.af.mil

Recent Incidents

March 2005 – A civilian pilot made an unauthorized landing on Runway 04 at MacDill AFB. The pilot with a passenger was operating from Ft. Myers, Florida en route to Peter O. Knight Airport. The pilot was not on MacDill control tower frequencies and did not have clearance to land. Following his exit from the runway and shut down of the aircraft's engine, the pilot and passenger complied with Security Forces guidance. The incident was reported to the FAA.

September 2006 – On 28 Sep, a student pilot and his evaluator, on an ATP cross-country, filed to fly from Craig Municipal near Jacksonville, Florida to Peter O. Knight airport Runway 21 in Tampa, Florida. At approximately 0851, the Piper Seminole landed on Runway 22 at MacDill. The aircraft was blocked by the Airfield Mgr shortly after turning off Taxiway Charlie at Golf. Both the student and instructor were detained and processed by Security Forces and were allowed to depart after paying applicable fines. The incident was reported to the FAA.

May 2007 – A young pilot over-flies the field apparently lost, looking for Peter O. Knight Airport. He was intercepted by the Hillsborough County Sheriff's Department aviation division and escorted out of the MacDill Class D airspace.

May 2011 – A civilian aircraft, on climb out from Peter O. Knight Airport, entered into Class B airspace without clearance and into the path of a C-17 on ILS approach to MacDill AFB. The FAA filed a pilot deviation on the civilian pilot.

January 2012 – A civilian pilot made an unauthorized landing on Runway 04 at MacDill AFB. The pilot and passenger were flying from Miami to Peter O. Knight airport. The pilot was unfamiliar with the Tampa area, and believed MacDill AFB Runway 04 was Peter O. Knight Runway 04. The pilot was not on MacDill Tower frequency and subsequently landed without clearance. Following his exit from the runway and shut down of the aircraft's engine, the pilot and passenger complied with Security Forces guidance. The incident was investigated by the FAA, ultimately leading to a 1-year license suspension, and fine.

July 2012 – A USAF C-17A landed at Peter O. Knight Airport Runway 22, instead of MacDill Runway 22.

Collision Avoidance Checklist

Accomplishing the following items every time you fly will greatly reduce your chances of being involved in a near miss or midair collision.

- **Check yourself**: Start with a check of your own condition. Your eyesight, and consequently your safety, depends on your mental and physical health.

- **Plan ahead**: Plan your flight ahead of time and practice good task management in the air. Have charts prepared in proper sequence and within easy reach. Keep the cockpit free of clutter. Be familiar with headings and frequencies ahead of time so you can spend more time scanning and less time "heads down" looking for things.

- **Clean your windows**: Make sure the windshield is clean and clear of obstructions.

- **Brief passengers and crew**: More people scanning can greatly increase your margin of safety.

- **Follow the S.O.P.s**: Stick to standard operating procedures (S.O.P.) and observe all flight regulations, such as correct hemispheric altitudes and proper traffic pattern procedures. Know and follow all applicable rules for the airspace you're flying in. Be predictable. In most mid-air collisions at least one of the aircraft involved wasn't where it was supposed to be.

- **Avoid congested airspace**: Plan to fly over or around high density traffic areas, such as the airspace over a navaid (passing slightly left or right is safer). Also plan to pass over all airports at a safe altitude and be particularly careful in the bay area between the western shore and the Brandon towers, as well as between Land O' Lakes and Sarasota.

- **Compensate for design**: Know your aircraft limitations and blind spots. An example would be a low wing aircraft descending and overtaking a high wing aircraft.

- **Increase your visibility**: Turn on appropriate lights (strobe & anti-collision) whenever your engines are running. Also turn on your landing lights when below 10,000 and within 10 miles of an airport.

- **Increase your radar and TCAS visibility**: Using a transponder and adjusting it to reply on both Mode 3/A and Mode C will greatly help this visibility. Cross check frequently with ATC.

- **Talk and listen**: Use your radios and communicate your intentions, especially in the traffic pattern, i.e. Unicom. Make frequent position reports along your route of flight. Monitor the appropriate ATC frequencies at all times and listen up for other pilots making position reports.

- **Use ATC services**: Obtain IFR clearance or participate in radar flight following and request traffic advisories.

- **Don't get complacent**: There is no guarantee that everyone is flying by the rules. Many midair collisions occur during periods of instruction or supervision. Even instructors make mistakes.

- **Use proper cockpit lights at night**: Even momentary use of white light disrupts your night vision. Full dark adaptation of the human eye takes between 15 and 30 minutes after exposure to white light.

- **Beware of wake turbulence**: Large aircraft produce severe wake turbulence.

- **Scan and clear constantly**: Use proper scanning techniques and understand the limitations of your eyes. As your eyes become fatigued, they become less efficient at seeing aircraft. Clear when in the traffic pattern and before all climbs, descents, turns and acrobatics. If you see military aircraft, scan ahead and behind. They frequently fly loose formation, often separated by a mile or more. Remember, if another aircraft appears to have no relative motion, but is increasing in size, it's on a direct collision course with you!

PLAN AND BE VIGILANT!!!!!!

MID-AIR COLLISION STATISTICS

Almost 50% of mid-air collisions result in at least one death. Naturally, mid-air collision avoidance (MACA) is an important aviation safety topic. With the sky becoming more and more congested, the threat of a mid-air collision is increasing. According to the NTSB, the most probable cause of mid-air collision is the "pilot in command failed to see and avoid other aircraft." Aircraft speeds today challenge our ability to "see and avoid."

Here are a few facts about mid-air collision:

1. Mid-air collisions generally occur during weekend daylight hours

- ✈ 56% of the accidents occurred in the afternoon.
- ✈ 32% of the accidents occurred in the morning.
- ✈ 2% of the accidents occurred at night, dusk, or dawn.

2. Most mid-air collisions occur under good visibility.

3. The majority of the aircraft involved in collisions are not on any type of flight plan.

4. Nearly all accidents occur at or near uncontrolled airports and at altitudes below 1000 ft.

5. Flight fatigue (fatigue resulting directly from flight related operations) is not a major factor in most mid-air collisions.

✈ The average flight time prior to the collision is 45 minutes. This time varies from takeoff to over seven hours. 60% of the pilots on the mishap flight had been airborne thirty minutes or less. Only 6% had been flying longer than two hours.

6. Pilots of all experience levels are involved in mid-air collisions, from the first solo ride to 20,000 hour veterans.

More on MacDill AFB Airspace

Due to reasons of national security, civilian aircraft operators are ordinarily <u>NOT</u> allowed to enter MacDill AFB airspace. Civilian aircraft operators that enter MacDill AFB airspace without permission may be subject to significant adverse action.

What defines MacDill AFB airspace you ask? Well, to paraphrase FAA Order 7400.9H, the Class D Airspace is defined as that airspace extending upward from the surface to, and including, 2,600 feet MSL within a 4.5-mile radius of MacDill AFB, excluding the portion within the Tampa International Airport Class B airspace. To the southwest, the airspace extends somewhat less than 4.5 miles where it abuts Albert Whitted Airport's 4-mile radius airspace.

Pages 11 and 12 graphically illustrate the extent of MacDill's Class D airspace, as well as the normal traffic pattern flow used by MacDill aircraft. Civilian operators must carry and use current flight charts to avoid straying into unauthorized airspace. Additionally per applicable FARs, unless otherwise authorized, each person must establish two-way communications with the ATC facility providing service ***<u>prior to</u>*** entering the Class D airspace, and maintain those communications while in the airspace. Consistent adherence to these FARs is the key to preventing confusion, fines, violations, and tragedy.

Due to the close proximity of local airports, EXTREME CAUTION should be exercised due to the possibility of mistaking one airport for another.

IFR/VFR Procedures

IFR Procedures:

General: Authorization for civil aircraft to enter MacDill AFB Class D airspace will be coordinated with 6 OSS/OSA, (813) 828-1759/2967, well in advance. Current policy as dictated by national security concerns will not be compromised for convenience. Aircraft with a valid need to transit the airspace will be approved on a case by case basis. The MacDill AFB tower does not maintain radar control of aircraft outside of MacDill's airspace, but controllers do their best to visually acquire and warn-off approaching civilian aircraft. Additionally, Tampa Terminal Radar Approach Control (TRACON) helps divert unwanted civilian aircraft when conditions permit. Tampa TRACON controls all aircraft transiting Tampa's Class B airspace, including aircraft in or around MacDill AFB's Class D airspace.

Departures: Aircraft depart MacDill AFB on tower frequency then switch to Tampa Departure. Normally, MacDill AFB departures climb on runway heading to 400 feet AGL before turning. Runway 04 departures then turn right to intercept the MCF 080 radial, while Runway 22 departures turn left to intercept the MCF 190 radial, in accordance with Area Planning 1A (AP/1A). All departure climbs are restricted to 1,600 feet MSL initially, until cleared higher by Tampa TRACON.

Radar traffic pattern: MacDill AFB's radar traffic pattern altitude is 1,600 feet MSL and operates close to Peter O. Knight Airport and Albert Whitted Municipal. Civilian aircraft operators should exercise extreme vigilance and caution in the vicinity of these two airports due to heavy military traffic around MacDill AFB.

VFR Procedures:

Traffic pattern: MacDill AFB's rectangular VFR pattern altitude is 1,100 feet MSL. Remember, MacDill AFB's traffic should normally work east of the runway, but can arrive from any direction.

Radio Frequencies

If unauthorized entry into MacDill AFB Class D airspace is unavoidable, contact **MacDill AFB Air Traffic Control Tower** immediately and, if possible, *prior* to entering the class "D" airspace on the following frequencies:

VHF – 123.700 or UHF – 294.7

ATIS Frequencies

MacDill AFB also provides an Automatic Terminal Information Service (ATIS), which can inform you of current wind speed and direction, temperature, altimeter, and pressure altitude. You can access this information by tuning in the following frequencies:

VHF – 133.825 or UHF – 270.1

Right of Way

Usually, right-of-way is given to the aircraft least able to maneuver. However, each pilot must take whatever action is necessary to avoid collision, regardless of who has the right-of-way.

Distress: Aircraft in distress have the right-of-way over all other air traffic.

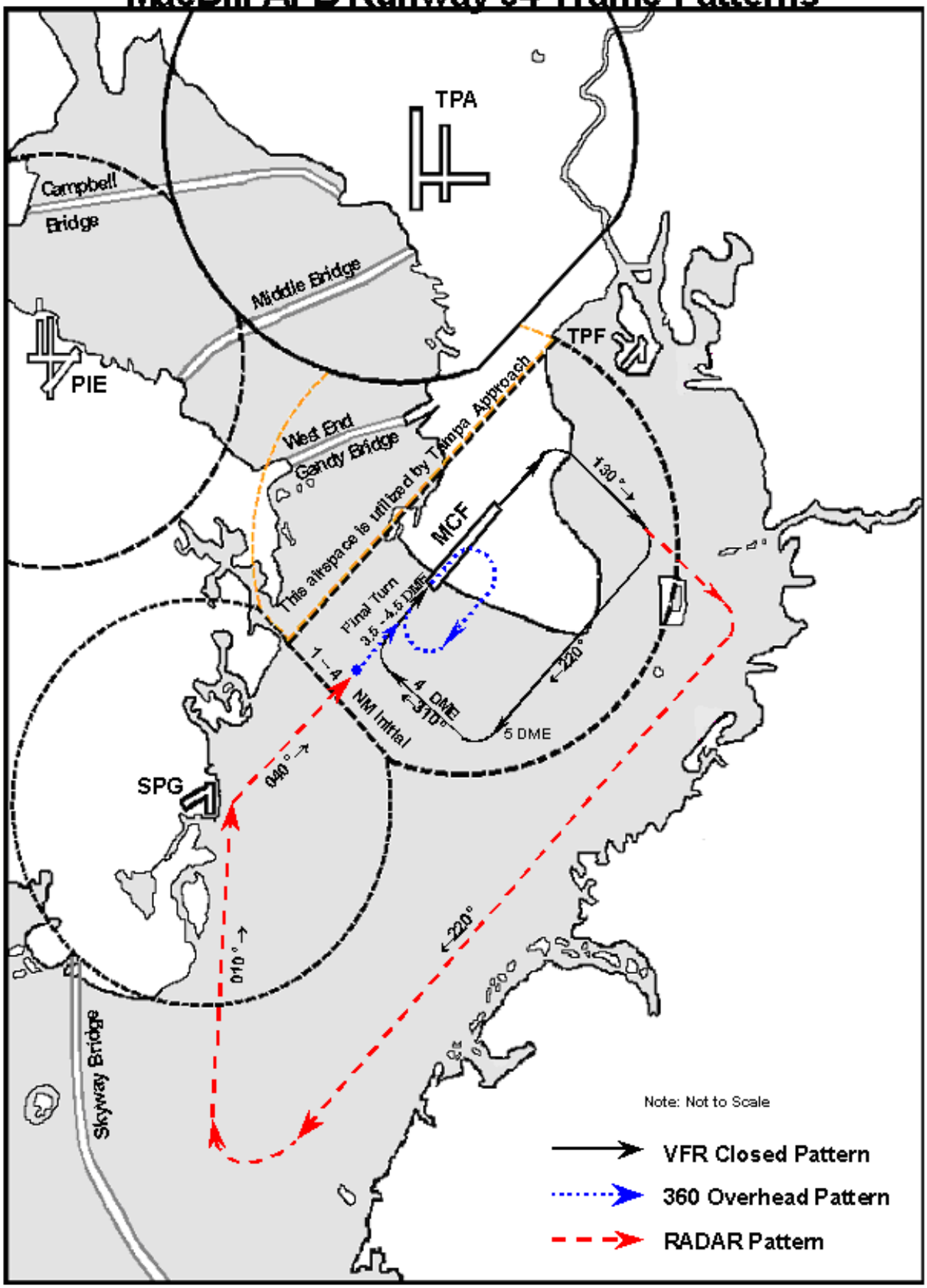
Converging: The aircraft to the other's right has the right-of-way. Aircraft of different categories have the right-of-way in the following order of priority: Balloons, Gliders, Aircraft towing or refueling, Airships, Rotary or fixed-wing aircraft.

Approaching Head-On: Each aircraft shall alter course to the right.

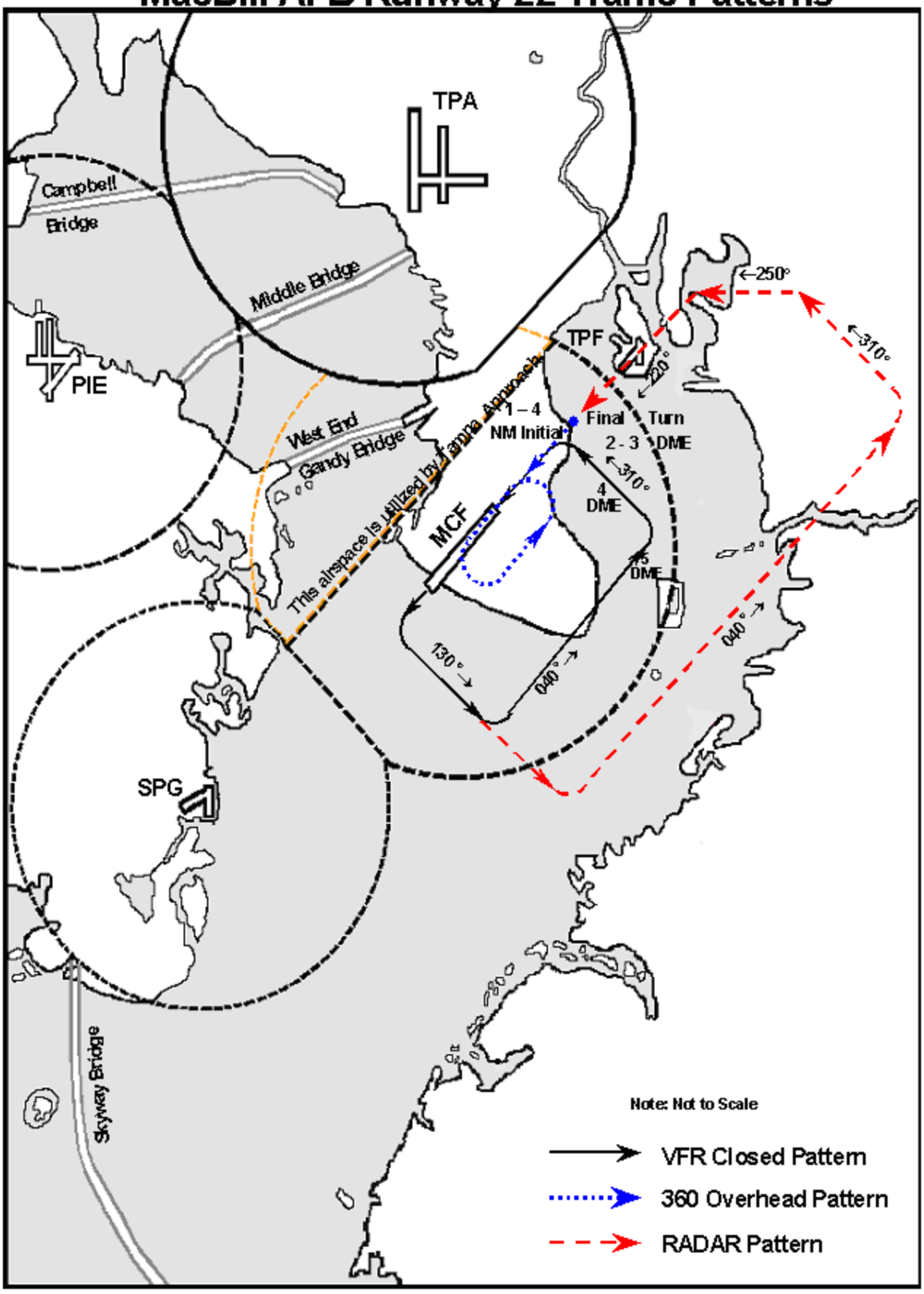
Overtaking: The overtaken (slower) aircraft has the right of way. The overtaking (faster) aircraft must alter course to the right.

Landing: An aircraft established on final approach has the right-of-way over aircraft airborne or still on the ground. If two or more are landing, the aircraft at the lower altitude has the right-of-way.

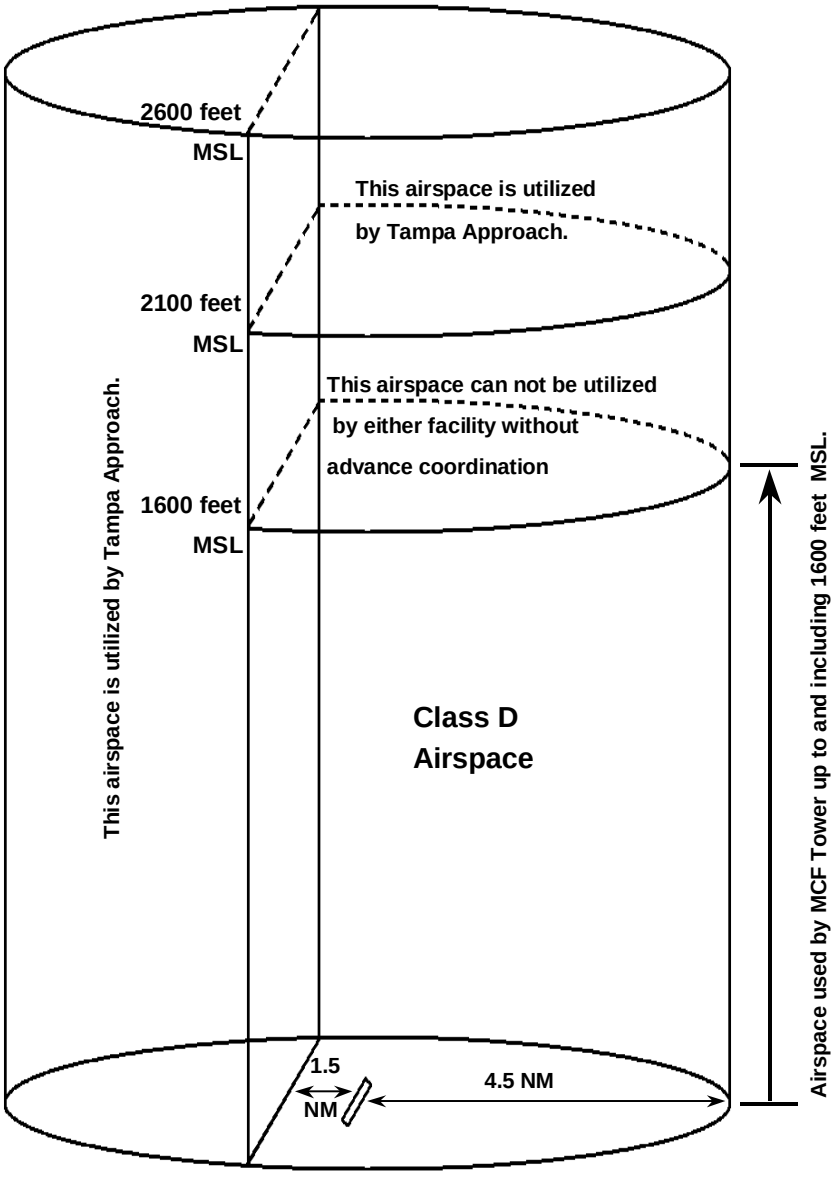
MacDill AFB Runway 04 Traffic Patterns



MacDill AFB Runway 22 Traffic Patterns



MacDill AFB Class D Airspace



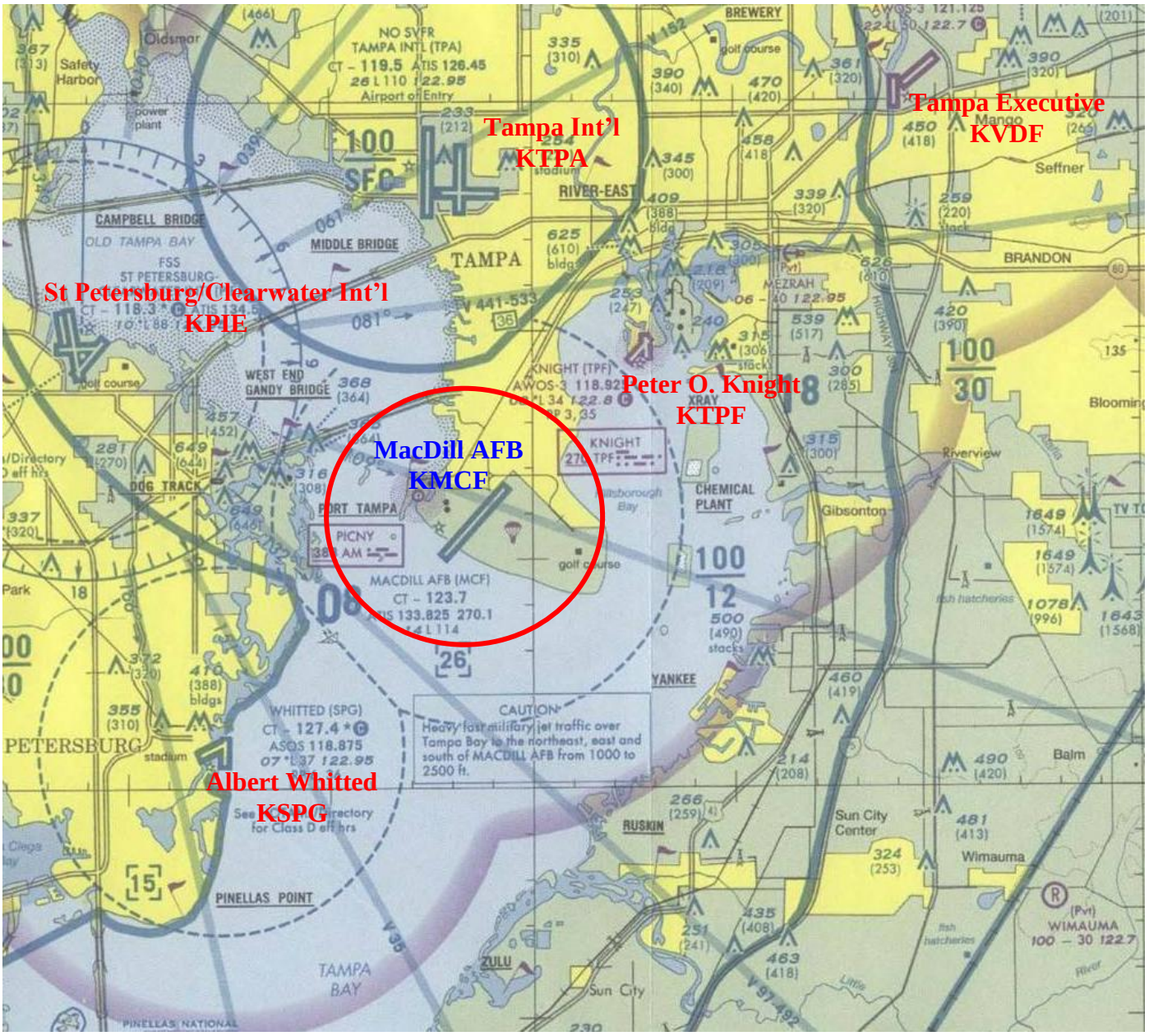
Tampa Approach Control may use that airspace within Class D airspace which is west of a line 1 and 1/2 NM west of and parallel to Runway 04/22, extending from the surface up to but not including 1200 feet MSL

Note: Not to Scale

MacDill AFB Field Elevation: 14 Feet MSL

Avoiding Potential Conflicts

There are three municipal airports that lie along the approach and departure corridors of MacDill AFB - Albert Whitted Airport (KSPG), Peter O. Knight Airport (KTPF), and Tampa Executive (KVDF). Only Albert Whitted has a manned control tower from 0700-2100 local, 7 days a week. Both Peter O. Knight and Tampa Executive use a UNICOM frequency in the visual pattern.



Albert Whitted Airport (KSPG)

Distance to MacDill AFB: 7.6 NM, course 048 degrees

Runways: 18/36 (2865’x150’) 07/25 (3677’x75’)

Traffic Pattern Altitude: 800’ MSL for both runways

Departure Altitude: 1600 MSL (Same as MacDill)

Frequencies: Tower – VHF 127.4 Ground – VHF 121.8

Peter O. Knight (KTPF)

Distance to MacDill AFB: 5.5 NM, course 224 degrees

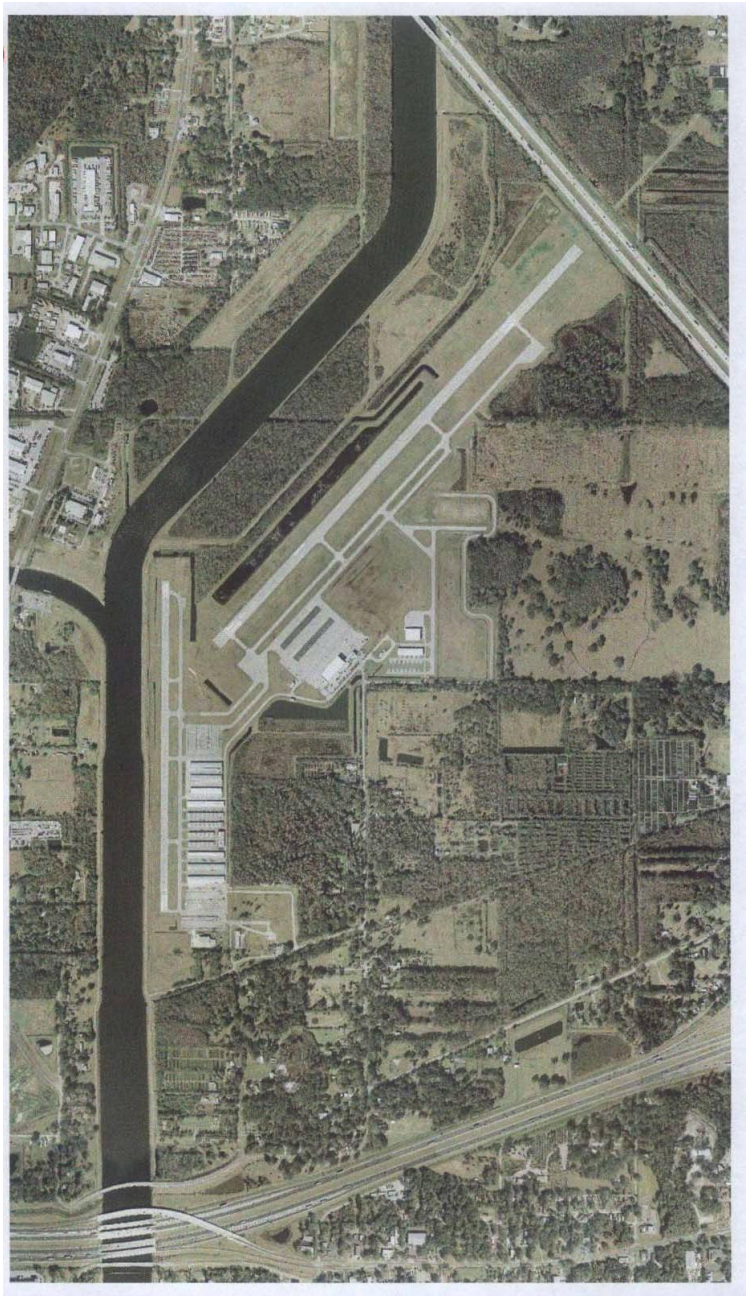
Runways: 18/36 (2688'x75') 04/22 (3405'x100')

Traffic Pattern Altitude: 1100' MSL for both runways

Frequencies: Tampa Approach – VHF 119.9 UNICOM – VHF 122.8

CAUTION!: Due to its geographic location and runway orientation, Peter O. Knight is often mistaken for or confused with MacDill AFB and vice versa. The air traffic from this airfield also presents the greatest potential for conflict with MacDill AFB departures and arrivals.

Tampa Executive (KVDF)



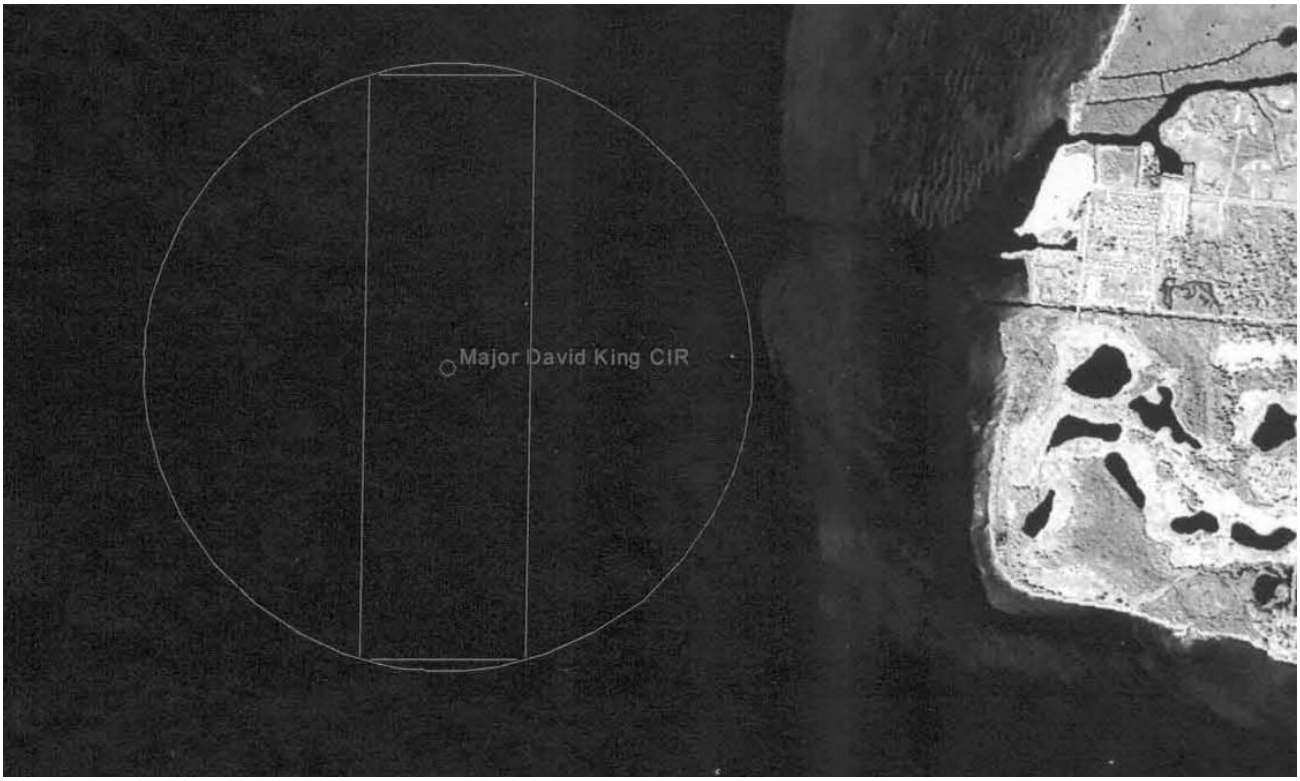
Distance to MacDill AFB: 13.6 NM, course 223 degrees

Runways: 04/22 (5000x100) 18/36 (3260x75)

Traffic Pattern Altitude: 1000’ MSL for both runways

Frequencies: Tampa Approach – VHF 119.9 UNICOM – VHF 122.7

Parachutist Drop Zones



Often, parachuting activities take place both within and above MacDill AFB's airspace. High altitude operations and activities can take place at altitudes as high as and above 10,000 ft. over MacDill AFB.

Normally, parachuting operations take place:

- In the MacDill Drop Zone (DZ), but locations may vary.
- Between 1250' & 1500 ft. AGL.
- Between 7:30 AM & 4:00 PM (although they can occur at any time)

Note: High altitude operations are normally completed by 10:00 AM.

Specific parachuting information is always listed in the Local NOTAMs.

The Major David King Water DZ is located directly off the southern tip of the MacDill AFB Peninsula.

Boeing KC-135R

(Operated by the 6 AMW)

Aircraft Specifics

- Wingspan: 131 feet
- Height: 42 feet
- Length: 136 feet
- Four CFM International F108-CF-100 engines

Performance Specifics

- Class D or E aircraft for IFR approaches depending on gross weight
- Takeoff gross weights up to 320,000 lb.
- Landing weights 200,000 to 140,000 lb.
- Pattern speeds 200 KIAS downwind down to 135 KIAS on final

Mission Specifics

- Aerial refueling tanker, IFR flights standard
- Up to 3 hours of local pattern work flying instrument approaches and VFR patterns

C-37A (Gulfstream V)

(Operated by the 6 AMW)

Aircraft Specifics

- Wingspan: 94 feet
- Height: 26 feet
- Length: 96 feet
- Two BMW Rolls-Royce BR710-48 turbofan engines

Performance Specifics

- Class C aircraft for IFR approaches
- Takeoff gross weights up to 90,500 lb.
- Landing weights up to 75,300 lb.
- Pattern speeds 170 KIAS downwind down to 120 KIAS on final

Mission Specifics

- Unified Combatant Commander support, IFR flights standard
- Up to 3 hours of local pattern work flying instrument approaches and VFR patterns

WP-3D

(Operated by NOAA)

Aircraft Specifics

- Wingspan: 99 feet 7 inches
- Height: 33 feet 8 inches
- Length: 111 feet 2 inches
- Four T-56-A14 turboprop engines

Performance Specifics

- Class C for IFR approaches
- Takeoff gross weight 135,000 lb.
- Pattern speeds 190 KIAS on downwind, 135 KIAS on final approach

Mission Specifics

- Research platform for hurricane and reconnaissance missions

Gulfstream IV-SP

(Operated by NOAA)

Aircraft Specifics

- Wingspan: 77 feet 10 inches
- Height: 24 feet 5 inches
- Length: 88 feet 4 inches
- Two Rolls-Royce Tay Mk 611-8 engines

Performance Specifics

- Class C for IFR approaches
- Takeoff gross weights 74,000 lbs.
- Pattern speeds 190 KIAS on downwind, 135 KIAS on final approach

Mission Specifics

- IFR missions standard
- High altitude atmospheric research and hurricane surveillance

DHC-6 Twin Otter

(Operated by NOAA)

Aircraft Specifics

- Wingspan: 65 feet
- Height: 19 feet 6 inches
- Length: 52 feet
- Two UACL OT6A-27 turboprop engines

Performance Specifics

- Class B for IFR approaches
- Takeoff gross weight 12,500 lbs.
- Pattern speeds approximately 90 KIAS

Mission Specifics

- Environmental and atmospheric impact surveys
- Low-level, slow-speed VFR missions

AC690A Turbo Commander

(Operated by NOAA)

Aircraft Specifics

- Wingspan: 46 feet 7 inches
- Height: 14 feet 11 inches
- Length: 44 feet 4 inches
- Two Garrett TPE-331-5 turboprop engines

Performance Specifics

- Class C for IFR approaches
- Takeoff gross weight 10,250 lbs.
- Pattern speeds approximately 120 KIAS

Mission Specifics

- Aerial photography for coastal or nautical charting and airport obstruction charting
- Maps coastal wetlands and measures snow water and soil moisture content

MacDill AFB Transient Aircraft

C-5 Galaxy

C-17 Globemaster

C-130 Hercules

A-10 Thunderbolt

F-16 Falcon

F-15 Eagle

C-40 (VIP Airlift)

T-6A Texan

MacDill AFB Transient Aircraft
(Continued)

T-45 Goshawk

T-38 Talon

Hornet F/A-18

T-1 Jayhawk

Coast Guard HC-130

Coast Guard HH-60

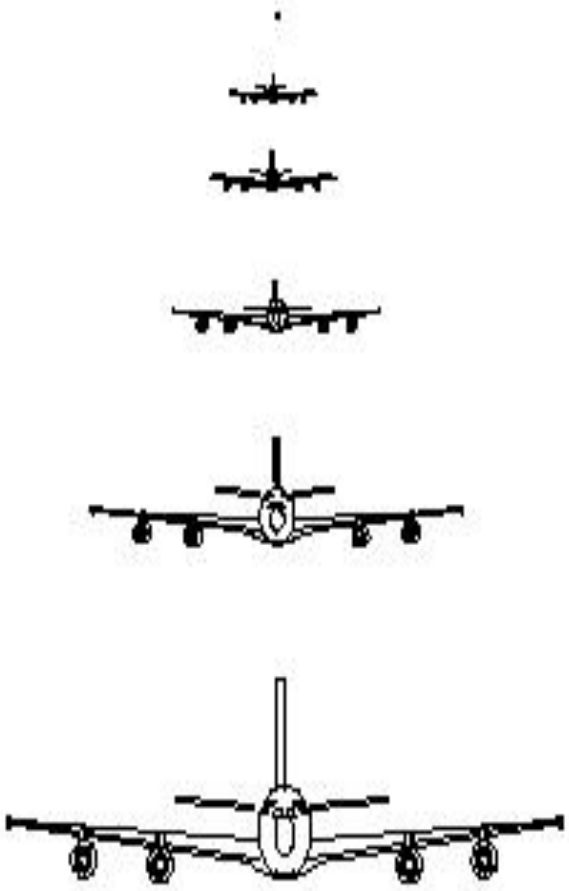
Extender KC-10

CLOSURE RATE CHART

This is based on combined speeds of two aircraft

DISTANCE SECONDS

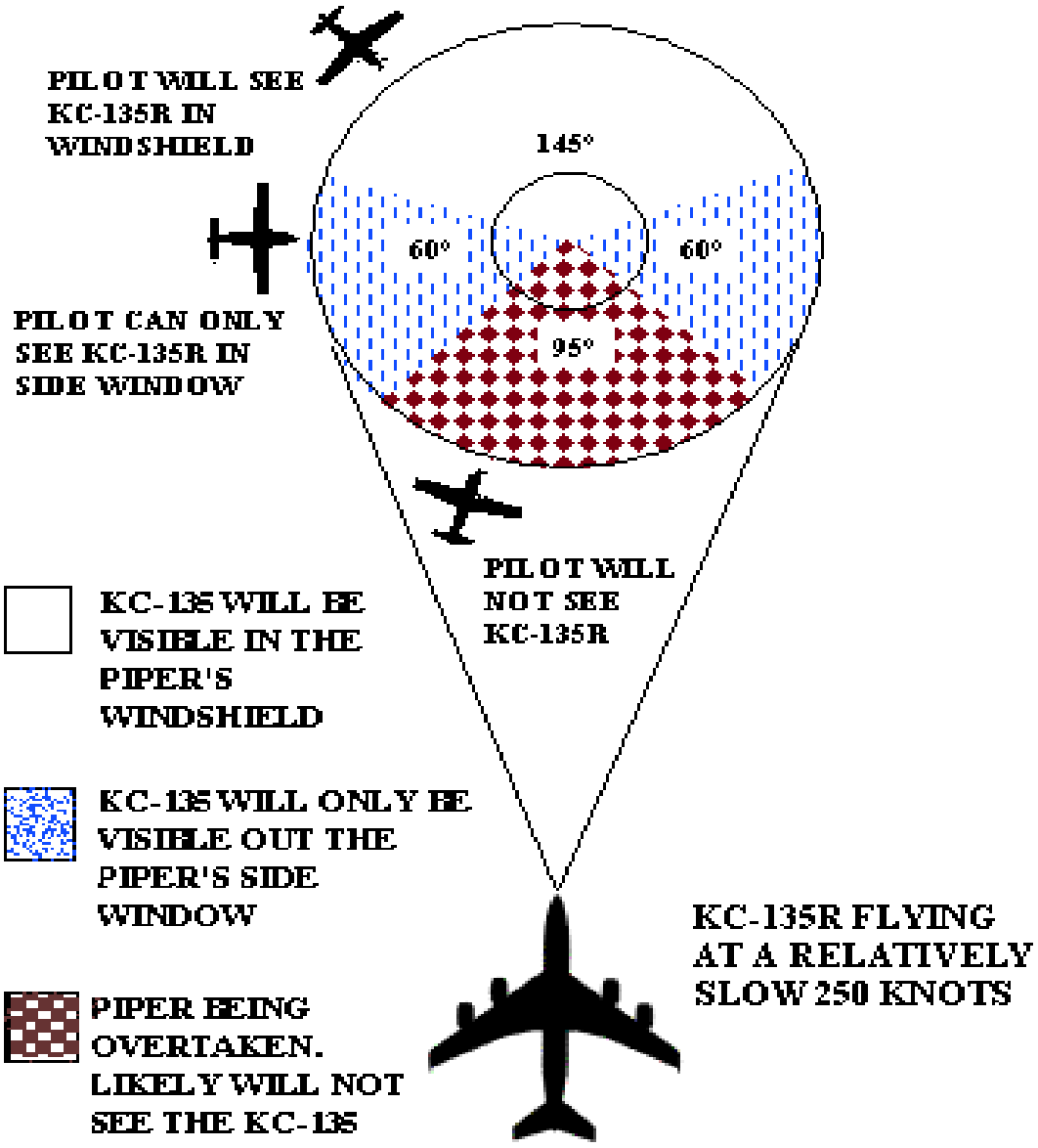
	AT 600 MPH	AT 210 MPH
10 MILES	60	170
5 MILES	30	85
3 MILES	18	56
2 MILES	12	38
1 MILE	6	18
0.5 MILE	3	9



The areas in the gray box are the danger areas.
This is based on recognition and reaction times.

GEOMETRY OF A COLLISION COURSE

CIRCLE REPRESENTS 360 DEGREES OF POSSIBLE COLLISION COURSE BETWEEN A PIPER FLYING AT 80 KNOTS AND A KC-135R FLYING AT 250 KNOTS



MacDill AFB Phone Numbers

Airfield Management Operations (AMOPS): (813) 828-2321

Contact AMOPS with questions regarding current notices to airmen (NOTAMs), flight plans, scheduled events, or issues regarding flight operations at MacDill AFB.

Command Post: (813) 828-4361

Contact Command Post to reach agencies listed here after hours. The CP has a 24 hour on-call duty personnel contact roster.

Control Tower: (813) 828-2120

Contact the tower for any concerns regarding MacDill airspace entry, current traffic pattern activity, and air traffic sequencing.

Flight Safety: (813) 828-2380

Contact Flight Safety with concerns about any hazardous flight activities, airspace concerns, flight procedures, safety meetings and speaking engagements, or any other flight safety related matters.

Public Affairs: (813) 828-2215

Call Public Affairs with questions about any upcoming aviation events (including airshows, press releases, or noise/air traffic complaints).

Useful Websites

Defense Safety Oversight Council for M.A.C.A.
www.seeandavoid.org

Tampa Airport and Peter O. Knight
www.tampaairport.com

Albert Whitted Airport St. Petersburg, FL
www.stpete.org/airport

Florida Department of Transportation Aviation Division
www.dot.state.fl.us/aviation

MacDill AFB Public Website
http://www.macdill.amc.af.mil

Aircraft Owners and Pilots Association
www.aopa.org

Flight Safety Foundation
www.flightsafety.org/home.html

FAA – Safety
www.faa.gov/safety/

FAA- Special Use Airspace Info
http://sua.faa.gov/sua/Welcome.do

US Avian Hazard Advisory System (BASH)
http://www.usahas.com/